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EXCAVATION OF A MASTODON AT VICKSBURG, MISSISSIPPI

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INTRODUCTION

The recent excavation of a mastodon skeleton from the loess deposits of Vicksburg by Dr. Eleanor Daly of the Mississippi Museum of Natural Science and her staff of museum employees and volunteers has provided one of the most complete skeletons of a *Mammut americanum* (Kerr, 1792) to be found in Mississippi.

A survey of the site was made to provide the exact location and elevation and to map the position of the bones as they were excavated. The bones were located within the loess deposits slightly below an old soil horizon, as indicated by color and textural changes. From the position of the mastodon, we can conclude that it died lying on its left side, and disarticulation, probably by scavengers, occurred before burial by an eolian deposit of loess. As the bones were excavated, an abundance of fossil land snails, especially those of the genera *Mesodon* and *Allogona,* were found on the surface of the bones and

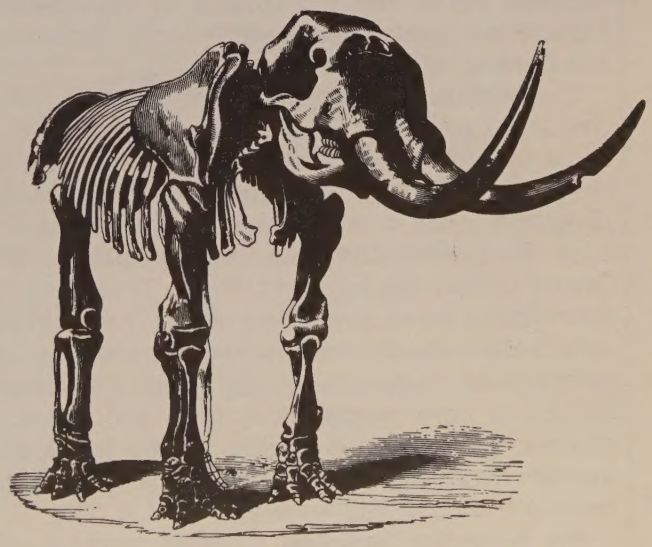

Figure 1. Skeleton of *Mammut americanum* (Kerr, 1792).

in the surrounding soil horizon (Burch, 1962, and Snowden, et al., 1968).

A discussion of the evolution, habitat, appearance, and disappearance of the mastodons is included as well as a brief history of this find and its excavation.

TAXONOMIC CLASSIFICATION

CLASS: Mammalia (Linnaeus, C. 1858)
SUBCLASS: Eutheria (Gill, T., 1872)
SUPERORDER: Monodelphia
ORDER: Proboscidea
SUBORDER: Mammutoidea
FAMILY: Mammutidae (Cabrera, 1929)
GENUS: *Mammut* (Blumenbach, J.F., 1799)
SPECIES: *Mammut americanum* (Kerr, R., 1792)

Classification after Hay, 1902; Olsen, 1979; Colbert, 1980; and Maglio, et al., 1978.

EVOLUTION AND HABITAT

According to present evidence, the evolution of the Order Proboscidea—the elephants and mastodons—began with *Paleomastodon* (Andrews, 1901), which lived in the Nile River delta area of North Africa in the early part of the Oligocene. *Paleomastodon* had the proportions of a small elephant, but it was only about six feet tall. Unlike modern elephants, it had a long face and a short trunk. This small mastodon was the first of the elephants to migrate into Eurasia. During the Miocene Period its descendants became larger and developed a longer trunk. At this point in time they migrated across Asia and crossed by the Siberian-Alaskan land bridge into North America (Schuchert and Dunbar, 1937).

The mastodon, *Mammut americanum* (Kerr, 1792), was one of the most conspicuous and widespread of all of the Pleistocene mammals (Shimer, 1949). In North America they were most abundant in the periglacial areas of the eastern spruce forests and open spruce woodlands; they were not limited to this habitat, as they also inhabited Florida, Texas, and the Great Plains areas, where they probably lived in the valleys, lowlands, and swamps. Analyses of undigested plant remains found in the ribcages of some excavated specimens have revealed that twigs and cones of conifers, leaves, coarse grasses, swamp plants, and mosses made up the majority of the diet of the mastodon (Kurten and Anderson, 1980, p. 344).

The American mastodon probably survived until early Holocene times, becoming extinct between 9,000 and 12,000 years ago. At the present time, man and mastodon have not been found in clear association at any excavation site. Increasing dryness, with a resulting change in vegetation, may have been a major factor in the extinction of the species, with possible additional hunting pressures by early man (Kurten and Anderson, 1980).

DESCRIPTION

The Pleistocene American mastodon, *Mammut americanum* (Kerr, 1792), was quite large, reaching the size of our present day Indian elephant, perhaps even larger. The word *Mammut* means "earth burrower," and it can be traced back to the Middle Ages, when eastern European farmers found gigantic bones in their fields and believed that they belonged to some monstrous burrowing beast. The name mastodon means "nipple tooth"—aptly describing the pronounced sets of paired cusps found on each tooth (Kurten and Anderson, 1980, p. 345).

Tusks up to seven feet in length extended from the upper jaws of both sexes, though those of the male were generally longer and heavier. The tusks were not enamel covered, but are circular in cross section, and show annular growth rings. The males, unlike our modern elephants, had vestigial lower tusks, but these were usually lost by maturity (Berry,1929). The tusks were probably used in conjunction with the long and flexible trunk to break off tree branches for feeding (Colbert, 1980). The teeth were comparatively small so that two or three could be in use simultaneously upon each side in each jaw (Shimer, 1949).

The legs were comparatively short, and the head lower and with a more flattened brow than that of the true elephants. The mastodons had a well-developed trunk, similar to that of the mammoths and modern elephants. Another similarity to its cousin the mammoth was its coat of coarse brownish hair, although it probably lacked the woolly undercoat characteristic of the mammoth (Raymond, 1947).

HISTORY OF MASTODON FIND IN VICKSBURG

On December 9, 1952, Mr. John O'Keefe, private citizen living in Vicksburg, Mississippi, contacted James R. McConaghie, Superintendent, Vicksburg National Military Park, for information about some large bones which had been partially uncovered by erosion on his property. These bones lay in a deep gully running alongside his house. One was a bone fragment about 12" long ending in a ball section about 7" in diameter. Two other bone fragments were also

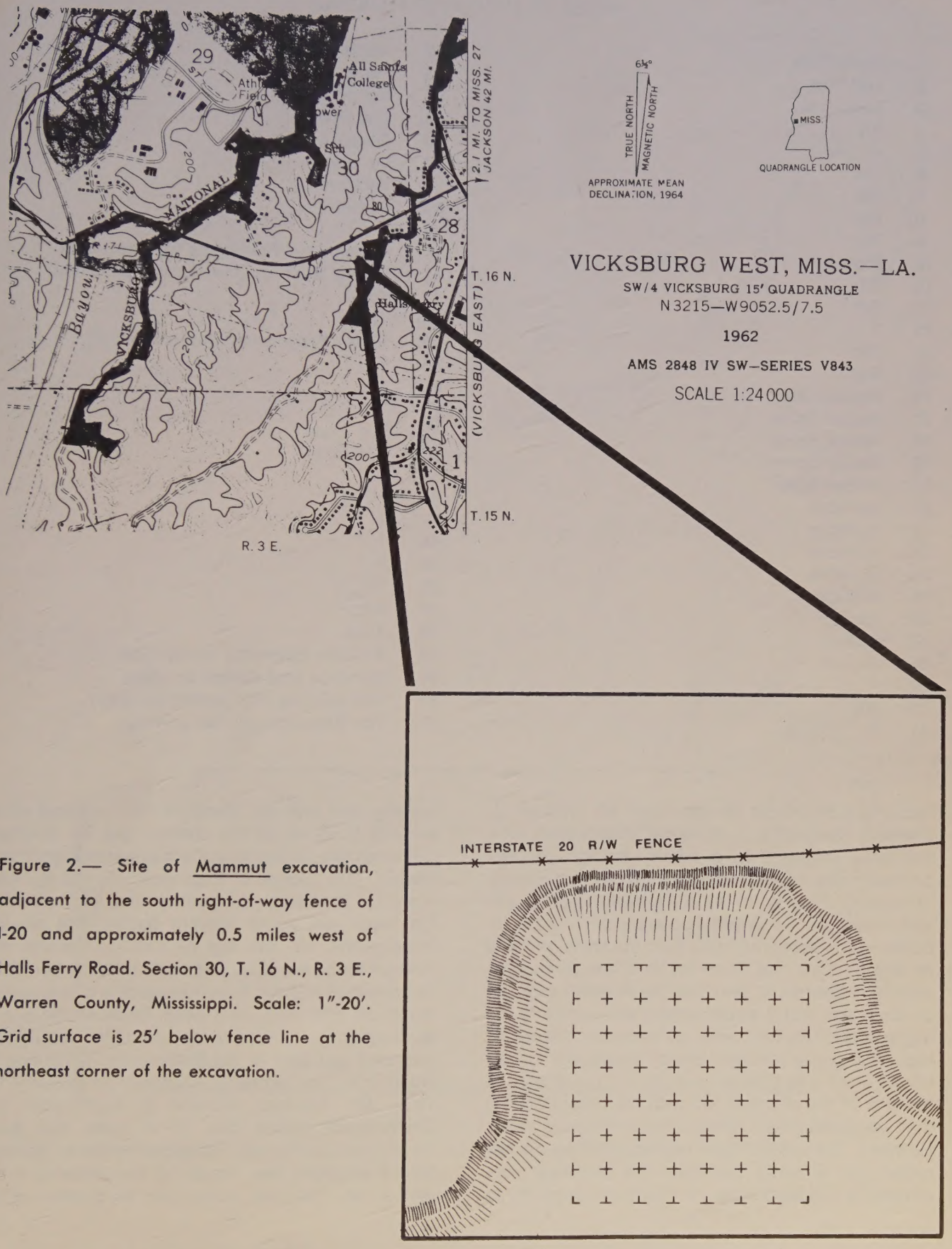

Figure 2.— Site of Mammut excavation, adjacent to the south right-of-way fence of I-20 and approximately 0.5 miles west of Halls Ferry Road. Section 30, T. 16 N., R. 3 E., Warren County, Mississippi. Scale: 1″-20′. Grid surface is 25′ below fence line at the northeast corner of the excavation.

INDEX TO EXCAVATED MATERIAL

1. Right Tusk
2. Left Tusk
3. Lower Jaw
4. Rib
5. Vertebra
6. Rib
7. Rib
8. Rib
9. Rib
10. Rib
11. Rib
12. Rib
13. ?
14. Rib
15. Rib
16. Neural Spine
17. Neural Spine
18. Neural Spine
19. Neural Spine
20. Neural Spine
21. Vertebra
22. Vertebra
23. Vertebra
24. Vertebra
25. Vertebra
26. Femur
27. Tibia?
28. Femur
29. ?
30. Rib
31. ?
32. Ankle Bones?
33. Pelvis
34. Rotten Plate
35. Toe Bone
36. Scapula Fragment
37. Vertebra
38. Vertebra
39. Vertebra
40. ?
41. Rotten Skull Fragments (not excavated)
42. Rotten Skull Fragments (not excavated)
43. Tooth
44. Tooth
45. Rotten Fragments? (not excavated)
46. ?
47. ?
48. ?
49. Toe Bone
50. Toe Bone
51. ?
52. ?
53. ?
54. ?
55. ?
56. Rib
57. Rib
58. Atlas
59. Scapula (overlying several ribs)
60. Humerus (not plotted on map)
61. Ankle Bones (not plotted on map)
62. Toe Bone (not plotted on map)

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found but could not be identified. Mr. William C. Everhart, Historian at the National Military Park, took the bone fragment to a nearby college geology professor who visited the site the next day with a group of students. They spent the day excavating at the site and uncovered a large pelvic bone and several smaller bones which appeared to be from the spinal process as well as some ribs. From the lie of the bones (See sketch), it seemed to them that the skeleton might all be there and that it would extend well back into the overburden of the ditch wall - an overburden about 20' high. The group removed two of the smaller bones, one of which was broken when struck by a shovel. At the end of the day they left with the understanding they would return and continue excavating the bones. However, after several days passed and they did not return, Mr. Everhart contacted the professor who advised he had been unable to return. He agreed to do nothing else until Mr. Everhart had explored other avenues to try to get the skeleton out. Mr. Everhart contacted two geologists at the Waterways Experiment Station, U.S. Corps of Engineers, Vicksburg, who inspected the bones and both felt that such a find in the loess soil would warrant further and serious investigation. Mr. Everhart returned to the site and covered the bones with loose earth for protection; then he consulted with his Superintendent and prepared a report on what had been done. Because the bones were not on Park property, the report Mr. Everhart had prepared was sent to the Smithsonian Institution in Washington for further information. On January 12, 1953, Mr. Everhart received a reply from the Smithsonian stating that since there had been numerous occurrences of mastodon material reported from Mississippi, they would not be interested in the excavation. They also stated that "the position of the

Figure 3. SCALE: 1″ = 5′
Excavation site showing surveyed grid with location of materials excavated.

Figure 4. Excavation site showing the large amount of overburden that was removed. Note right-of-way fence at top of back wall.

Figure 5. Tusks prior to plastering.

Figure 6. Preparing tusks for plastering and removal.

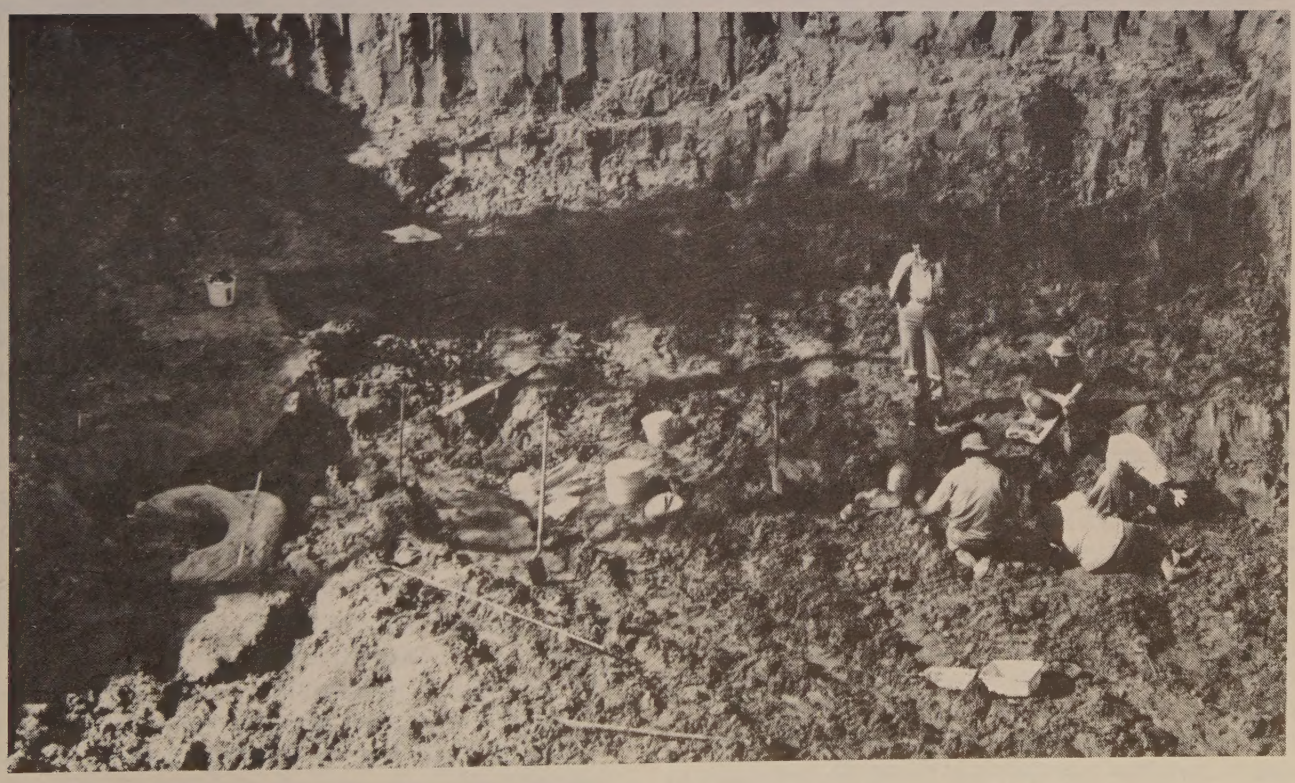

Figure 7. Excavation of leg bones. Note plastered tusks at left.

Figure 8. Excavation site showing grid for locating bones on map.

pelvis would indicate that the specimen is largely disarticulated." They suggested the find be collected and preserved for local exhibition.

Nothing more was done on this find until 1970, when members of the Mississippi Gem & Mineral Society learned from George Schabilion, a member who lived in Vicksburg, that the bones were there. Leslie and Sue Pitts and their three boys, Cam, Patrick and Bill, and Janet and Mac Maganos met Esther and George Schabilion at the home of the owner of the property, whom George had contacted and received permission from to inspect the site; they decided that their club would try to work with officials of Warren County to excavate the bones. They tried to contact the owner of the property who had not been home the day they visited the site, but were unsuccessful. Although some planning was done with the County Supervisor, P.T. Hellums, the matter was finally dropped when the property owner could never be contacted for permission to continue with the excavation. Also, it was soon after this that the Schabilions moved to Georgia.

After the Mississippi Museum of Natural Science hired a vertebrate paleontologist, Michael Frazier, Mrs. Pitts, who was also a member of the Museum Foundation, told him about the skeleton, and it was decided that the Museum Foundation might be able to assist in excavating it. However, in the meantime, the Society moved the bones of a prehistoric whale, which their membership had excavated from a creek in Yazoo County, to the museum and efforts to begin raising money to restore and display this fossil skeleton were begun.

In January, 1983, the President of the Mississippi Museum of Natural Science Foundation, John Sullivan, Jr., began contacts with the landowner, Mr. John Logue, about the possibility of removing the skeleton, as it had been learned that Mr. Logue was in the process of selling his property to be the site of a new shopping center. When the property was finally sold, Mr. Sullivan contacted Mr. Lewis Miller of Miller Construction Company, building the shopping center, and he graciously agreed to allow the Museum staff to remove any of the skeleton which could be found. He

Figure 9. Excavating rear leg bones.

also loaned his backhoe and operator to remove the 20′ of overburden so that the staff and volunteers could work on the removal of the bones. An area 1225 square feet was excavated and work began on the removal.

When Dr. Eleanor Daly, vertebrate paleontologist who had replaced Mr. Frazier on the Museum staff, began the excavation, the complete pelvis with tail bones, two complete tusks 7′4″ long, lower jaw with some teeth, and a complete femur were found, along with other smaller bones. Work had begun in March, 1984, and continued until May, 1984, despite days of rain and muddy water at the site. Assistance in removing the skeleton was given to the Museum staff by members of the Mississippi Gem & Mineral Society, the Mississippi Museum of Natural Science Foundation, the Mississippi Bureau of Geology, and volunteers from the surrounding areas.

ACKNOWLEDGMENTS

The writers wish to express their appreciation to Dr. Eleanor Daly of the Mississippi Museum of Natural Science for allowing us to examine her files and field notes, and for her time and support, and to the staff of the Mississippi Bureau of Geology for their suggestions and encouragement, without which this article would not have been written.

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CALENDAR OF EVENTS
1984 July - October

July 21-28 - Eighth World Conference on Earthquake Engineering, San Francisco. (R.B. Matthisen, Earthquake Engineering Research Institute, 2620 Telegraph Ave., Berkeley, California 94704. Phone: 415/848-0972).

July 23-26 - Urban hydrology, hydraulics and sediment control, symposium, Lexington, Kentucky. (Elizabeth Haden, College of Engineering, Office of Continuing Education, University of Kentucky, Lexington, Ky. 40506. Phone: 606/257-3972).

August 10-13 - Society of Economic Paleontologists and Mineralogists, first mid-year annual meeting, San Jose, California. (SEPM headquarters, Box 4756, Tulsa, Oklahoma 74159. Phone: 918/743-9765).

August 15-17 - Ground-water modeling, workshop, Columbus, Ohio. (Kathy Butcher, National Water Well Association, 500 W. Wilson Bridge Road, Worthington, Ohio 43085. Phone: 614/846-9355).

August 20-22 - Shelf sands and sandstone reservoirs, short course, Casper, Wyoming. (Society of Economic Paleontologists and Mineralogists, Continuing Education Department, Box 4756, Tulsa, Oklahoma 74159. Phone: 918/743-2498).

September 30 - October 3 - Clay Minerals Society, annual meeting, Baton Rouge, Louisiana. (Ray E. Ferrell, Dept. of Geology, Louisiana State University, Baton Rouge, LA 70803. Phone: 504/388-5306).

October 7-13 - Association of Engineering Geologists, annual meeting, Boston. (Noel Ravneberg, AEG headquarters, Box 506, Short Hills, N.J. 07078).

October 8-10 - Association of Earth Science Editors, annual meeting, Portland, Oregon. (Beverly Vogt, Oregon Dept. of Geology, 1005 State Office Building, Portland, Oregon 97201. Phone: 503/229-5580).

October 17-19 - American Institute of Professional Geologists, annual meeting, Orlando, Florida. (Bobby J. Timmons, Timmons Associates, Box 50606, Jacksonville, Florida 32250. Phone: 904/246-4533).

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PETROLEUM NEWS

MISSISSIPPI OIL AND GAS STATISTICS, FOURTH QUARTER 1983

Oil

	Bbls. Produced	Severance Tax	Average Price Per Bbl.
October	1,665,527	$ 2,653,038.22	$26.55
November	4,054,573	6,089,822.83	25.04
December	2,596,111	4,201,642.63	26.97
Totals	8,316,211	$12,944,503.68	$25.94

Gas

	MCF Produced	Severance Tax	Average Price Per MCF
October	13,245,985	$2,470,843.50	$3.11
November	16,103,361	3,401,414.16	3.52
December	21,400,104	4,054,666.99	3.16
Totals	50,749,450	$9,926,924.65	$3.26

Source: State Tax Commission

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